

CLAIMS

1. (amended) A treating agent for a sheet surface, comprising a copolymer comprising a polymer moiety having vinyl alcohol units and a polymer moiety having cationic groups, said copolymer being
5 a graft copolymer in which said respective polymer moieties are a back bone polymer and a branch polymer, either of which has the vinyl alcohol units, and the other of which has the cationic groups.

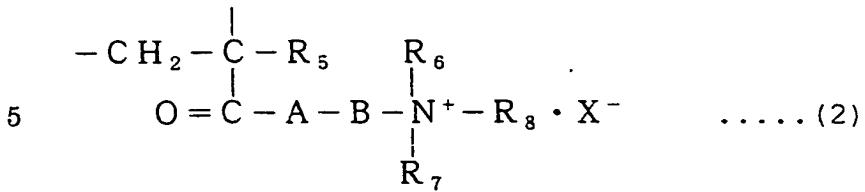
2. (amended) A treating agent for a sheet surface according to claim
10 1, wherein said back bone polymer of said graft copolymer is derived from a water-soluble or water-dispersible polymer having vinyl alcohol units, and said branch polymer is composed of at least one repeating unit selected from the group consisting of a repeating unit represented by the following formula (1), a repeating unit
15 represented by the following formula (2), a repeating unit represented by the following formula (3) and a repeating unit represented by the following formula (4):

[Formula (1)]

20
.....(1)

25 (wherein, R₁ and R₂ represent H or CH₃, R₃ and R₄ represent hydrogen, alkyl groups having 1~4 carbon atoms or benzyl groups, and X⁻
30 represents a counter ion);

[Formula (2)]

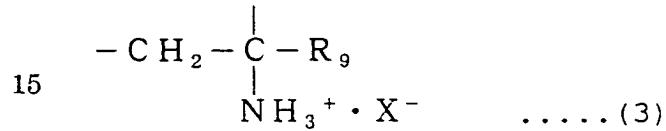


(wherein, A represents O or NH, B represents C_2H_4 , C_3H_6 or $\text{C}_3\text{H}_5\text{OH}$,

R₅ represents H or CH₃, R₆ and R₇ represent alkyl groups having 1

10 ~4 carbon atoms, R₈ represents hydrogen, an alkyl group having 1
~4 carbon atoms or a benzyl group, and X⁻ represents a counter ion);

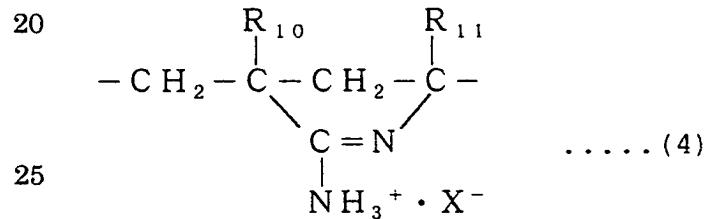
[Formula (3)]



(wherein, R₉ represents H or CH₃, and X⁻ represents a counter ion);

and

[Formula (4)]



25 (wherein, R₁₀ and R₁₁ represent H or CH₃, and X⁻ represents a counter ion).

30 3. (amended) A treating agent for a sheet surface according to claim 2, wherein said branch polymer comprises at least one repeating unit selected from the group consisting of the repeating unit represented by said formula (1) and the repeating unit represented by said formula (2).

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4. (amended) A treating agent for a sheet surface according to claim 3, wherein said branch polymer comprises the repeating unit

represented by said formula (1) and the repeating unit represented by said formula (3) and/or the repeating unit represented by said formula (4).

5 5. (amended) A treating agent for a sheet surface according to claim 2, wherein said graft copolymer is obtained by radical polymerization of a monomer composition generating at least one repeating unit selected from the group consisting of the repeating unit represented by said formula (1), the repeating unit represented by said formula (2), the repeating unit represented by said formula (3), and the repeating unit represented by said formula (4) in the presence of the water-soluble or water-dispersible polymer having vinyl alcohol units.

15 6. (amended) A treating agent for a sheet surface according to any one of claims 2 to 5 wherein, the formula weight ratio of the vinyl alcohol units of said water-soluble or water-dispersible polymer having vinyl alcohol units and the cationic groups is from 1:20 to 2:1.

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7. (amended) A treating agent for a sheet surface according to any one of claims 2 to 5, wherein the proportion of the vinyl alcohol units contained in said water-soluble or water-dispersible polymer having vinyl alcohol units is from 70 mol% to 100 mol%.

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8. (amended) A treating agent for a sheet surface according to any one of claims 5 to 7, wherein, in said radical polymerization reaction, the pH of the reaction system is from 1.0 to 6.0.

9. (amended) A treating agent for a sheet surface according to any one of claims 2 to 8, wherein the degree of polymerization of said water-soluble or water-dispersible polymer having vinyl alcohol units is from 100 to 2500.

10. (amended) A treating agent for a sheet surface according to any one of claims 2 to 9, wherein said water-soluble or water-dispersible polymer having vinyl alcohol units is grafted by 40% or more by radical polymerization.

11. (amended) A treating agent for a sheet surface according to any one of claims 2 to 10, wherein 10 times weight of methanol is added to a polymer aqueous solution, in which the concentration of the polymer mixture after said grafting reaction is 20 wt%, to form precipitate, and the amount of dry matter of the formed precipitate is 60 wt% or less of the water-soluble or water-dispersible polymer having vinyl alcohol units used as raw material.

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12. (amended) A treating agent for a sheet surface according to any one of claims 2 to 11, wherein the intrinsic viscosity of said polymer mixture after grafting reaction in 2% ammonium sulfate aqueous solution at 25°C is from 0.1 to 2.0 dl/g.

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13. (amended) A treating agent for a sheet surface according to any one of claims 2 to 12, wherein monomer generating the repeating unit represented by said formula (1) is a salt of diallylamine,

a salt of diallylmonomethylamine, or a salt of diallyldimethylamine.

14. (amended) A treating agent for a sheet surface according to
any one of claims 2 to 12, wherein monomer generating the repeating
5 unit represented by said formula (2) is a salt or quaternary compound
of a dialkylaminoethyl(meth)acrylate or a salt or quaternary
compound of a dialkylaminopropyl(meth)acrylamide.

15. (amended) A treating agent for a sheet surface according to
10 any one of claims 2, 4 to 12, wherein monomer generating the repeating
unit represented by said formula (3) is N-vinylformamide or N-
vinylacetamide.

16. (amended) A treating agent for a sheet surface according to
15 any one of claims 2, 4 to 12, wherein monomer generating the repeating
unit represented by said formula (4) is a monomer composition of
N- vinylformamide and acrylonitrile.

17. (amended) A treating agent for a sheet surface according to
20 claim 1, wherein said graft copolymer is a graft copolymer in which
vinyl ester of carboxylic acid is graft copolymerized with a polymer
of a monomer containing N-vinylcarboxylic acid amide or a hydrolysis
product of said polymer as the back bone polymer raw material to
form the branch polymer, and the branch polymer is made to contain
25 vinyl alcohol units by hydrolyzing the resulting graft copolymer.

18. (amended) A paper for ink jet printing prepared by coating a
coating color comprising the treating agent for a sheet surface

according to any one of claims 1 to 17, a filler, and a binder onto a sheet surface.

19. (amended) A paper for ink jet printing prepared by making a
5 treating solution comprising the treating agent for a sheet surface according to any one of claims 1 to 17 penetrate into a sheet surface.

20. (amended) A paper for ink jet printing according to claim 18 or claim 19, wherein said paper comprises the treating agent for
10 a sheet surface of 0.02 to 5 g/m².

21. (deleted)